

Class VII Swamp Waters

Background

- **Began as an effort to address naturally low DO & pH in swamps/blackwater streams & rivers**
- **Characterized by:**
 - **Low flows – Minimal re-aeration – large quantity of decaying vegetation → high concentrations of organic acids (tannins, humic & fulvic substances)**

Background cont'd

- Proposed amendments Class VII (Swamp Waters) w/ pH criteria 4.3 – 9.0 and simultaneously presented candidate waters in southeast Va. within the Chowan drainage for Class VII
- Proposed pH range of 4.3 – 9.0 based on journal literature & review of other states' w/ similar category
- Class VII pH criteria became effective 2004
 - Applies to 9 waters w/i Chowan basin
 - Currently no numerical DO criteria for Swamp Waters. Only narrative criteria.
 - VPDES permits must still have pH limit 6.0 -9.0
- Methodology for justifying reclassification of a water body to Class VII formalized in 2004
 - Adapted from Maptech, Methodology for Assessing Natural Dissolved Oxygen and pH Impairments: Application to the Appomattox River Watershed, Virginia. 2003.

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Existing Examples




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Amendments Under Consideration

- Methodology was used to develop list of waters that may justify additional Class VII waters in the following DEQ regions:
 - PRO – 14 waters
 - TRO – 4 waters
 - NRO - 2 waters
- pH criteria may need updates (i.e. lower end of the range may not be low enough. Example – Lake Drummond mean pH range 3.8 – 4.3).
- May be necessary to provide for numerical DO criteria

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Dissolved Oxygen Criteria

- Naturally low DO, cause of many impairments in current and future Class VII waters
 - DO minima highly variable (zero – 3.99)
 - Variable within swamp, depth, season and year
 - 166 potential sites
 - Site specific most protective but difficult
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Interesting Fact

A joint VCU/DEQ study found that study sites within old growth blackwater system watersheds showed the greatest pH depressions and study sites within deforested and agricultural watersheds exhibited less severe pH depressions

